

Affected Environment

INTRODUCTION

The affected environment encompasses the 956 acres of Moccasin Bend Archeological District National Historic Landmark that might or would be impacted by the alternatives. It includes cultural resources and natural resources, visual resources, socioeconomic conditions, and visitor experience. The study area is on the southern portion of the Moccasin Bend peninsula landform that extends into the Tennessee River. It is immediately west of downtown Chattanooga, Tennessee.

CULTURAL RESOURCES

American Indian History

Moccasin Bend has a rich and varied cultural history, with evidence of human occupation extending to the earliest human cultures in North America. The earliest known aboriginal occupation in Tennessee was during the Paleo-Indian Tradition, estimated to date between 14,000 B.P. and 8,000 B.P. This occupation has been tentatively described in three consecutive horizons: the Clovis horizon, 14,000–12,000 B.P.; the Cumberland-Redstone horizon, 12,000–10,000 B.P., and a third horizon that has been designated as the “Quad,” 10,000–8,000 B.P. On Moccasin Bend, Paleo-Indian sites have been located on the Sequatchie loam soil during the construction of the mental health hospital’s Johnson and Winston buildings.

The Archaic Tradition has been divided into Early, Middle, and Late Archaic periods. A time range from 8,000 to 700 B.P. has been estimated for this stage. On Moccasin Bend, stratified Early Archaic, Kirk horizon projectile points have been recorded. The site, located on the second terrace, was found during the forced main construction, and it extends an unknown distance north and south of the original location point. Middle Archaic components have been uncovered at Moccasin Bend. Evidence of Late Archaic occupation is extensive throughout Moccasin Bend. A number of excavated sites contained extensive

stratified deposits, including one site destroyed by dredging operations preceding construction of I-24. Other excavated components included a Late Archaic structure and five associated features including a hearth on the floor was radiocarbon dated at 1335 B.P. Archeologists also reported a cache of eight triangular biface preforms, exotic Dover chert, a rectangular greenstone ax preform, steatite shreds, and a Mulberry Creek projectile point recorded in association with the structure.

The Woodland Tradition in southeastern Tennessee can be divided into Early Woodland, 700 B.P. to 200 B.P.; Middle Woodland, 200 B.P. to A.D. 600; and Late Woodland, 600 A.D. to A.D. 1000. The transition from late Archaic to the Early Woodland is characterized by the addition of ceramics to the late Archaic assemblage and a change toward increased floodplain horticulture. Quartzite and sand-tempered ceramics with plan and fabric-marked surface treatments represent the Early Woodland ceramics. The Early and Middle Woodland has been documented at five sites. Extensive Woodland midden with potential structural remains located on the forward slopes of the riverbank have been recorded, but the site was destroyed by dredging. An extensive Woodland midden was located at a site. A structure floor contained limestone tempered plan and complicated stamped sherd. A radiocarbon date of A.D. 405 was reported. The Late Woodland Tradition produced a number of burial mounds. At Moccasin Bend archeologists have described the Hamilton Mortuary Mounds. Other internment sites were plowed, but may contain intact remains. Other Late Woodland sites have been disturbed may be associated with possible Civil War era fortifications and later 19th century burials in iron coffins.

The Mississippian Tradition began ca. A.D. 1100 and continued until 1630 to 1650 or later. Archeologists have divided this tradition into Early Mississippian (A.D. 1100 to 1250), Middle Mississippian (A.D. 1250 to 1500), and Late Mississippian (A.D. 1500 to 1650). During the Mississippian Period, aboriginal culture reached a

peak with multiple-mound towns, intensive maize horticulture, and a stratified, hereditary political structure.

The Chattanooga area was abandoned by Mississippian populations by 1630 when they moved southward to settle. In the period from the 1600s to 1817–1819, Moccasin Bend was minimally occupied. Following the treaty with the U.S. government, the Cherokees were all moved south of the Tennessee and Hiwassee Rivers. The treaty did give the Cherokees the right to claim some land north of the Tennessee River, and several Cherokees and mixed blood Cherokees claimed 640-acre reservations. One such reservation was that of John Brown, a local Cherokee on Moccasin Bend, who claimed a reservation on the right bank of the river at a spot that took his name, Brown's Ferry. (The Moccasin Bend terminus of Brown's Ferry is located on the shoreline of the existing sewage treatment facility and is not in the study area. The western terminus of Brown's Ferry, across the river, is currently on privately owned land). This 640-acre tract north of the terminus of Moccasin Bend included a dwelling located away from the river and on the road from old Washington. This acreage was later sold to Euro-American settlers and probably cleared for agriculture in the 1830s–1840s. Some of the American Indians forcibly removed from the area in 1836–1837 crossed Moccasin Bend probably north of the study area on an abandoned and now obscured road running to Brown's Ferry. The short portion of the Trail of Tears that crosses Moccasin Bend lies outside the study area. A larger number of refugees traveled from Chattanooga downstream on the Tennessee River around Moccasin Bend. The river, which surrounds Moccasin Bend on three sides, is the designated water route of the Trail of Tears National Historic Trail. With the removal of the Cherokees and the development of Chattanooga as an industrial and transportation center, Moccasin Bend remained largely undeveloped, with only scattered farmstead and a network of roads to the various fords upriver from the town.

The Civil War at Moccasin Bend

Civil War action came to the Chattanooga area in late summer 1863 on the heels of earlier campaigns in central Tennessee. Military activity at Moccasin Bend represents two distinct periods of occupation — the Federal siege of Chattanooga

while it was held by Confederate forces (August–September 1863), and after the Battle of Chickamauga (September 19–20), the Federal positions in the city under siege by the Confederates (September–November 1863). The military emplacements on Moccasin Bend document first the crafty bombardment of Chattanooga from Stringers Ridge by Eli Lilly and two sections (four guns) of his “Crack Battery of Indiana” on August 21–27, 1863, ending in the retreat of the Confederate army from the city, and then the fortification of Chattanooga to cover the critical supply link at Brown's Ferry, counter Confederate artillery fire from Lookout Mountain and serve as the forward position for the first offensive attacks that culminated in the battles of Lookout Mountain and Missionary Ridge and the complete reversal of Confederate fortunes in the Southeastern states.

Following the Union retreat to Chattanooga after Chickamauga, General Walter C. Whitaker was ordered to take control of Moccasin Point. The entirety of Moccasin Bend from North Chattanooga to Williams Island Ferry was occupied by Whitaker's Brigade. Rifle pits and cannon emplacements were constructed immediately. Whitaker deployed his forces at three points on Moccasin Bend including a hill approximately 3/4 mile north of the pontoon bridge crossing the Tennessee; troops were positioned at the southern terminus of Stringers Ridge at the toe of Moccasin Bend; and forces were stationed at Brown's Ferry. By late September two batteries were placed on Moccasin Bend to command Lookout Mountain. During early fall 1863 after Chickamauga, the two armies faced off without a major confrontation. Moccasin Bend was the shield protecting the western approaches to Chattanooga.

By early October the complex of earthen gun emplacements and rifle pits and campsites on Moccasin Point was referred to as Fort Whitaker in official military correspondence. During the October–November interval a number of artillery duels ensued between the Federal troops on Stringers Ridge and the Confederates on Lookout Mountain.

The Union army went on the offensive in late October capturing Brown's Ferry on the 27th. A series of tactical maneuvers ensued, and by November 25 the Union army had captured

Lookout Mountain and Missionary Ridge to the east. There is no evidence that suggests Union troops remained on Moccasin Bend after December 1863. With Chattanooga secured, the town was transformed into an advance staging area for the long march to Atlanta. While troops in Chattanooga maintained their defensive posture, the main battlefield moved south.

Archeological Resources

In 1983 the entire 956-acre tract was nominated as the Moccasin Bend National Register District, and in 1986 the National Park Service designated the site as a national historic landmark. Work undertaken by the Chattanooga Regional Anthropological Association (CRAA) became pivotal to the designation (McCollough et al. 1985). In 1993 the Civil War Roundtable of Chattanooga joined in the preservation effort at Moccasin Bend. Two additional archeological sites were added to the inventory of Civil War period sites in the complex of gun pits and campsites at the south end of Stringers Ridge known as Fort Whitaker.

The following archeological resources are contained in the designated Moccasin Bend Archeological District National Historic Landmark. Although the landmark comprises 956 acres, the known archeological resources are primarily concentrated in two major areas: the American Indian sites along the southern and western floodplain areas of Moccasin Bend and the Civil War resource primarily on Stringers Ridge on the bend's eastern flank.

Significant known archeological resources at Moccasin Bend have been recovered from 18 sites, including, most importantly, the Vulcan, Mallards Dozen, and Hampton Place, which are located on the western margin of the bend on the present river terrace, and a Woodland site consisting of eight conical mounds located on the toe of Moccasin Bend.

The Vulcan site is stratified with distinct Terminal Archaic Period and Middle-Late Woodland components. Subsurface testing revealed undisturbed midden deposits, hearth features, and evidence of a Late-Terminal Archaic pit house radiocarbon date at 1335 B.P. Woodland pottery sherds were recovered from upper levels of the sites. General classes of archeological data in this site include subsistence data such as faunal, floral, and midden deposits; architectural data such as structure floors, pit houses, and hearths; and culture chronology data such as charcoal in association with features and decorated ceramics.

The Mallards Dozen site is a large, deeply and distinctly stratified site with Early-Middle Archaic occupation as well as a concentrated Middle Woodland deposit. Testing discovered a Middle Woodland structure radiocarbon dated at A.D. 405. All classes at this site include subsistence-related food refuse, architectural features, floral and faunal remains, and ceramic and lithic artifacts.

The most celebrated site, the Hampton Place complex, contains two large Late Mississippian protohistoric towns visited in the 16th century Spanish explorers. The two site areas were surrounded by a palisade, with each area having a



*Entrance to American Indian sacred site
(Hampton Place)*



Hampton Place

“big house,” a plaza, and small semisubterranean dwellings. The Hampton Place site contains unparalleled data on the initial influence of European culture on indigenous Southeastern Indian culture. The very large number of human burials may also indicate protohistoric diseases and dietary stresses as shown in skeletal pathologies. At Hampton Place, C. B. Moore (1915) excavated a mortuary structure that contained 31 burials, most of which included early Spanish period trade artifacts.

CRAA-conducted fieldwork in 1982–1983 and 1991 has helped to identify the town perimeters and internal structure, map vandal damage, and begin preliminary definition of artifact assemblages present at the site (McCullough and Bass 1983; Alexander 1992). Early Spanish contact materials have been recovered from this town, and Hampton Place may be the site of Coste-Tali visited by DeSoto in 1540. Hampton Place is acknowledged to be one of the most important early European contact sites in the United States. Hampton Place has yielded a significant volume of early Spanish trade material. Additional significance derives from observation that part, if not all, of Hampton Place burned, sealing primary household materials including trade goods in place in its building remnants.

The eight conical mounds at the southern toe of Moccasin Bend comprise an important complex of special use sites. The mounds, although partially excavated in 1915, collectively can be expected to yield highly significant data on ceremonial behavior in the Woodland Period. From other regional examples of this type of site, the mounds are expected to contain evidence of construction techniques, a primary “high status” burial, and secondary burials in the mound fill. Even those sites that have been altered contain information on construction techniques and mortuary practices. One of these mounds is also reported to contain a number of historic period coffins, possibly Union army casualties from the action on Stringers Ridge.

The careful and well-documented explorations of the Hampton Place protohistoric towns as well as the entire southern half of Moccasin Bend, including survey and subsurface testing results, analysis of data, evaluations and recommendations for further needed research, and effective long-term security and management of the

resources are described in *Moccasin Bend, The Unknown National Treasure of Chattanooga* (McCullough and Bass 1983).

Further survey and testing may reveal the sites of John Brown’s dwelling as well as evidence of later farmsteads and outbuildings. Since the central portion of the study area was covered by several feet of dredged fill removed from the extreme southern end of Moccasin Bend in the early 1960s, these historic era agricultural remains may be more difficult to locate.

Civil War Resources

The Civil War features of the Battle of Chattanooga in 1863 are evident throughout the wooded slopes, gaps, and crests of Stringers Ridge and comprise several internally complex sites. These sites consist of a possible signal tower base; two cannon emplacement earthworks for fire directed at the city; a linear 20-meter triple cannon emplacement; a late, western-facing double cannon emplacement 2 meters high with four embrasures, surrounded by discontinuous rifle pits and leveled bivouac pad areas on the slopes protected from fire from Lookout Mountain; two C-shaped cannon emplacements (one with an embrasure and one without), suggesting the use of different types of cannon or different periods of occupation; facing and flanking rifle pits, and bivouac pads; a complex containing, from south to north on the southernmost isolated ridge crest, a right-angled flanking rifle pit 35 meters long, two west-facing C-shaped cannon pits faced with rifle pits, a probable sally port; an L-shaped cannon emplacement with two embrasures, and a 30-meter flanking rifle pit. In level areas of gaps and springs between Stringers Ridge knobs, a complex of at least 17 bivouac pads apparently surrounding a main, level occupation area in a gap, and a series of bivouac pads on the slopes surrounding an apparent main, level occupation areas surrounding a spring. Also the remains of an informal road system connected the various gun emplacements remains extant. Finally the modern coffins encountered in 1915 in “Mound D” in the Woodland burial mound complex on the terrace below these extensive Civil War era facilities may represented Federal casualties from the action on Moccasin Bend in the fall of 1863.

Cultural Landscape

During the aboriginal occupation of Moccasin Bend, the landscape would have been wooded with thick understory. The American Indians would have done some clearing in the immediate vicinity of their occupation sites. Probably more land would have been cleared during the Mississippian period due to the increased reliance on maize, beans, and squash. In the period from the 1600s to 1817–1819, Moccasin Bend was minimally inhabited. Following the Cherokee relocation in the 1830s, it is likely that a number of scattered farmsteads were developed on Moccasin Bend. A road probably linked Chattanooga with Brown's Ferry, but that road trace has been lost.

During the Civil War access roads were driven up and down the knobs of Stringers Ridge, cannons were dug in behind massive earthworks, and a network of rifle pits and bivouac facilities were built. Other than this wartime development, no other changes occurred on Stringers Ridge until a law enforcement firearm training range and telecommunications tower were erected.

The entire floodplain portion of the study area was evidently improved pasture and row crops by 1958. Currently the area is largely fallow and unmanaged, with various stages of field succession in the northern, wooded lands on Stringers Ridge on the east, and old fields, woodlots, and lawns/hayfields on the southern extremity or toe of the bend. The extreme northern end of the floodplain in the study area remains a cleared pasture with dense grass cover. A drainage ditch runs north-south through the western margins of the floodplain. Small scale truck farming was abandoned on the southern bend area in 1974.

Starting in the 1960s the mental health hospital, golf course, radio towers, law enforcement firearm training range, a private residence, and a road have been constructed at Moccasin Bend. Spoil material was deposited on the upper portion of the study area near the radio towers in 1963. Since the late 1960s and early 1970s native vegetation has been allowed to grow back, and the study area is now in dense understory with scattered deciduous hardwoods except for the developed areas.



Civil War earthworks (gun emplacements) on Stringers Ridge.

NATURAL RESOURCES

Physiography and Topography

Moccasin Bend is in the Ridge and Valley physiographic province near its junction with the Cumberland Plateau region. The Ridge and Valley province is characterized by northeast-southwest trending ridges formed by intense uplifting and folding of rocks. Erosion wore away softer layers of rock, and this process formed valleys. An almost continuous bluff or escarpment extends between the provinces and rises almost 1,000 feet above the Tennessee River level.

The terrain in the study area ranges from primarily flat, level land with low-lying flood areas at the western edge to steeply sloping ridges on the east. Elevations range from about 660 feet above mean sea level at the western edge to approximately 820 feet above mean sea level along the eastern ridge.

Geology and Soils

The Ridge and Valley Province is underlain by limestones of dolomites and shales of Cambrian through Mississippian age. Softer Ordovician limestones and shales have been pushed up and eroded to create valleys. Erosion resistant layers of bedded chert of Mississippian age have formed irregular ridges referred to as the Fort Payne Knobs. The knobs form a linear ridge on Moccasin Bend known as Stringers Ridge.

Sediments in the area were derived from parent materials including quartzite, shales, and granites of the Appalachian Mountains, and the limestones and sandstones of the Cumberland Plateau and Ridge and Valley Provinces. Seven soil series underlie the study area.

Most of the soils in the western and southern portions of Moccasin Bend are well-drained but have severe limitations for development such as structures and roads especially in areas prone to flooding. Limitations are generally moderate in areas protected from flooding. Soils underlying the golf course are not well-drained and are on slopes less than 5%. Limitations in this area are severe due to wetness.

South of the golf course a major portion of the central part of the study area is underlain with spoil material of sand and gravel dredged from

the south end of the riverbank for construction of Interstate 24 in 1963. Borings in 1964 indicated a depth of 14 to 17 feet and revealed the fill was too unstable and soft to support structural development. Tests in 1981 showed an improvement in stability, but recommended further testing of soil-bearing capacity before development. Water levels were 8 to 10 feet below the surface. According to park staff, no testing has been conducted since 1981.

Vegetation

Native vegetation on Moccasin Bend has been degraded from dredging sand and gravel and from agricultural and development activities. Portions of the site had been used for pasture land and planted in row crops until the 1960s when the area was allowed to return to a natural condition. Plant communities today are in early stages of succession to forests and consist of dense understory with scattered deciduous hardwoods.

Vegetation in upland areas is a mixed forest canopy of evergreen and deciduous trees. Tree species in the riparian forest habitat include sweetgum, sycamore, black willow, river birch, cottonwood, box elder, slippery elm, green ash, silver maple, hackberry, and willow oak. Common understory vegetation includes swamp dogwood and sumac. Japanese honeysuckle is the dominant ground cover in open areas of the forest. Old field habitat includes crabgrass, horseweed, poke-weed, asters, broomsedge, Queen Anne's lace, and berry briars.

Various stages of old field succession exist in the northern portion of the study area, wooded lands are on Stringers Ridge on the east, and old fields, woodlots, and lawns/hayfields are on the southern extremity on land occupied by the Moccasin Bend Mental Health Hospital.

Water Resources

Moccasin Bend is a peninsula within the Tennessee River watershed and is bounded on the east, south, and west by the river. Two freshwater springs exist north of the mental health hospital and east of Moccasin Bend Road. Also on Moccasin Bend are several drainages and two small ponds. One pond is about 1/2 mile north of the state hospital west of Moccasin Bend Road

and the other is on the golf course less than 1,000 feet from the riverbank.

According to the Environmental Protection Agency (1997), the index of watershed indicators rates the Tennessee River in the Chattanooga area as having “less serious water quality problems” with “low vulnerability to stressors such as pollutant loadings.” On a scale of 1 to 6, with 1 identified as “better water quality,” the overall watershed rating in 1997 was 3. The overall score for this watershed was based on indicators of current condition and future vulnerability.

Floodplains and Wetlands

According to the Federal Emergency Management Agency, a 100-year floodplain parallels the Tennessee River and varies in width from less than 50 feet near the southwestern portion of the circular road on state hospital property to approximately 1,600 feet on the golf course. A 500-year floodplain generally parallels the 100-year floodplain and also is in low-lying areas on and south of the golf course on the western portion of Moccasin Bend. The 500-year floodplain also follows portions of drainages including along Moccasin Bend Road to the east of the golf course.

Wetlands are identified on the U.S. Fish and Wildlife Service’s National Wetland Inventory 7.5 minute quadrangle map for the Chattanooga area. The map classifies three areas on the Moccasin Bend Golf Course as palustrine open water wetland systems. Two areas south of the golf course and approximately half way between the east and west riverbanks also are classified as palustrine open water wetlands. All but the southernmost of the wetland areas are excavated areas.

Wildlife and Aquatic Life

Drainageways on Moccasin Bend provide habitat for a variety of wildlife. Mammals include opossum, short-tailed shrew, meadow vole, white-footed mouse, and hispid cotton rat. In addition, a small population of deer has been known to inhabit the area. Bird species observed include the Carolina wren, tufted titmouse, mockingbird, song sparrow, American robin cardinal, rufous-sided towhee, red-tailed hawk, and American kestrel. Several waterfowl species known to fly and feed along the Tennessee River have nesting

sites on Moccasin Bend. Reptiles and amphibians include the black rat snake, fence lizard, and five-lined skinks. Turtles and frogs inhabit the site particularly along the river front properties.

Sucker and catfish occur in deeper waters, and minnows and shiners in the shallow, near-shore areas of the Tennessee River. Fish populations likely have lower density and diversity than at other sites along the river due to the presence of heavy silt deposits that accumulate along the inner banks of river bends.

Threatened, Endangered, or Special Concern Species

Consultation with the U.S. Fish and Wildlife Service determined that no federally listed or proposed endangered and threatened species are known to occur on Moccasin Bend. Records available for Hamilton County indicate that the following federally listed endangered and threatened species may occur in the vicinity of Moccasin Bend:

- Bald eagle (*Haliaeetus leucocephalus*) – threatened
- Snail darter (*Percina tanasi*) – threatened
- Orange-footed pimpleback (mussel) (*Pleurobema cooperianus*) – endangered
- Pink mucket pearly mussel (*Lampsilis abrupta*) – endangered
- Fine-rayed pigtoe (mussel) (*Fusconaia cuneolus*) – endangered
- Dromedary pearly mussel (*Dromus dromas*) – endangered
- Tubercled-blossom pearly mussel (*Epioblasma torulosa torulosa*) – endangered
- Rough pigtoe (mussel) (*Pleurobema plenum*) – endangered
- Cumberland monkeyface pearly mussel (*Quadrula intermedia*) – endangered
- Large-flowered skullcap (*Scutellaria montana*) – endangered
- Small-whorled pogonia (*Isotria medeoloides*) – endangered

In addition, state-listed species that may occur in the area include:

- Bachman’s sparrow (*Aimophila aestivalis*) – endangered
- Wood lily (*Lilium philadelphicum*) – endangered

- Narrow-leaved trillium (*Trillium lancifolium*) – endangered
- Spreading false foxglove (*Aureolaria patula*) – threatened
- Yellow honeysuckle (*Lonicera flava*) – special concern species
- Three-parted violet (*Viola tripartita* var. *tripartita*) – special concern species
- Yellow jessamine (*Gelsemium sempervirens*) – special concern species

Much of the potential habitat on Moccasin Bend is on land that has been disturbed from agricultural use in the past or is currently maintained for urban uses. These developed areas do not provide suitable breeding habitat for the above threatened, endangered, or special concern species. Species would most likely only occur in these areas as transients or migrants.

VISUAL RESOURCES

Approaching the Moccasin Bend study area from the north, the large buildings at the regional wastewater treatment plant are the focus point of the viewshed. Farther south along Moccasin Bend Road, views within the site are of wooded lands, open areas around the model airplane facility, heavily wooded Stringers Ridge, and the open space of the mown grassy areas of the golf course and acreage surrounding the state mental health hospital. Particularly during the winter, downtown Chattanooga and the industrialized areas along the Tennessee River to the east are visible from Stringers Ridge. In addition, I-24 is visible to the south, across the river from Moccasin Bend. Views to the west across the river are primarily of a rural scene with residential development interspersed along the river corridor. Portions of the Tennessee River and Lookout Mountain can be seen from various vantage points at Moccasin Bend, especially from the heights of Stringers Ridge. Primary intrusive elements are features within the site that do not contribute to the natural or cultural resource experience and detract from the overall natural or cultural character. These elements include buildings and infrastructure at the state mental health hospital, the radio towers, the law enforcement firearm training range, the golf course development, overhead power lines, and Moccasin Bend Road. The main secondary intrusion (outside the national historic landmark) is the wastewater treatment facility.

SOCIOECONOMIC CONDITIONS

Population and Economy

Moccasin Bend is in Hamilton County, which is one of five counties in the Chattanooga Metropolitan Statistical Area. According to the 1990 census, Hamilton County had a population of about 285,500, a decrease of 0.8% from 1980. The estimated population of the county for 1997 is approximately 299,000.

Per capita income for Hamilton County was \$23,924 in 1995 compared to \$21,060 for the state of Tennessee. The 1997 unemployment rate for the county was 4.3% compared to 5.4% for the state.

In 1995 the largest earnings by industry in Hamilton were services (30%), manufacturing (27.8%) and retail trade (12.2%). Within the metropolitan statistical area, the top five entities employing the most people were the Tennessee Valley Authority, Erlanger Medical Center, and Blue Cross/Blue Shield of Tennessee, McKee Foods Corporation, and the city of Chattanooga.

The Moccasin Bend Mental Health Hospital employs approximately 400 people ranging from physicians and nurses to clinical and administrative support staff. The total budget for the hospital facility is approximately \$17 million annually, with approximately \$13.9 million being payroll and the remainder being operating expenses. The Moccasin Bend Golf Club employs 12 full-time and 12 part-time employees with an operating budget of approximately \$700,000 per year. They pay approximately \$107,000 per year to lease the golf course. The jointly operated law enforcement firearm training range is used by several law enforcement entities with up to 1,000 officers being trained on an annual basis. The Chattanooga Radio Control Club has a membership of approximately 100 members and pays an annual lease fee of \$200.00.

Chattanooga is centrally located in the southeastern part of the U.S., and 10 million people live within a 150-mile radius. In addition, it is centrally located within 140 miles of Atlanta, Birmingham, Knoxville, and Nashville. Chattanooga's strategic location has assisted in making the area a major manufacturing and distribution center for the region, which includes portions of Tennessee, Georgia, North Carolina,

Alabama, and other neighboring states. Almost one-third of the major U.S. markets and nearly 70 million people are within one day's drive of the city.

Tourism

More than 10 million people visit the Chattanooga area each year. Tourist attractions include museums, parks, craft and music festivals, orchestral and operatic performances, and exhibitions and theatrical productions. Some visitor attractions are listed below:

- The Tennessee Aquarium is the world's largest freshwater aquarium and visited by over 1 million visitors annually.
- Ross's Landing Park and Plaza encompasses the aquarium.
- Chattanooga Choo Choo accommodates nearly 900,000 visitors per year.
- Chattanooga's Riverbend Festival is recognized as one of the top ten festivals in the country and attracts more than 500,000 people.
- The Chattanooga Visitors Center provides information to over 300,000 tourists per year.
- Tennessee Riverpark is a system of riverfront trails, fishing piers, and picnic facilities along the 22-mile Tennessee River corridor in Hamilton County.
- Ruby Falls attracts almost 400,000 visitors annually.
- Chickamauga-Chattanooga National Military Park is the nation's first and largest Civil War battlefield and has over 1 million visitors per year.
- The Incline Railway has an annual visitation of nearly 450,000 visitors per year.
- Creative Discovery museum is an interactive children's museum.
- Rock City attracts nearly 500,000 visitors.
- Trail of Tears National Historic Trail

- Sporting events brought to Chattanooga by The Greater Chattanooga Sports and Events Committee have added increasing amounts of income to the local economy. Income from these events has increased from \$7.2 million in 1993 to \$22.7 million in 1997.

Tourism contributions to the economy for the Chattanooga area has increased 29% from 1989 to 1995 when visitor expenditures totaled \$453,410,000.

Land Use

Land use in the study area is an urban mix of recreation and public facilities. Of the total 956 acres, the city of Chattanooga and Hamilton County jointly own 600 acres, a portion of which is the 156 acres leased to the Moccasin Bend Golf Course. A second parcel is used as a law enforcement firearm training range for the Hamilton County Sheriff's Department and the Chattanooga Police Department. The Federal Bureau of Investigation and the Bureau of Alcohol, Tax, and Firearms also train at the facility. The Chattanooga Radio Control Club uses a portion of the land south of the golf course for their model airplane club activities.

The state-owned mental health hospital occupies 334 acres with two main clusters of buildings in the southern portion of Moccasin Bend. Private ownership accounts for 21.2 acres, which includes a parcel of 12.7 acres containing the WDEF radio towers and another parcel with a private residence.

Other land uses in the study area include transportation and utilities. Hardwood forest and dense understory covers most of the undeveloped remaining acreage.

Adjacent to the northern border of the golf course and outside the study area is the Moccasin Bend Wastewater Treatment Facility on 184 acres of city-owned property. Land use north of this facility is industrial with large parcels of vacant land.

Utilities

Moccasin Bend is supplied with water, gas, and electric lines located along Moccasin Bend Road. An 8-inch water line and 8-1/2 and 12-inch gas

lines serve the area. Colonial Pipeline has a 50-foot petroleum pipeline right-of-way that traverses the southern portion of the site and extends west to the river.

In addition to aboveground electric lines along Moccasin Bend Road, an Electric Power Board high tension power line extends across the Tennessee River west of Moccasin Bend. The line continues eastward along a 150-foot right-of-way to approximately one-third of the distance between the river and Moccasin Bend Road and extends northward to the study area boundary. Plans are being developed for future river crossings in the vicinity of Moccasin Bend.

VISITOR EXPERIENCE

Access, Circulation, and Parking

Access to the Moccasin Bend site is primarily by I-24 and I-124 and secondary roads that eventually intersect with Moccasin Bend Road. This two-lane collector roadway traverses the eastern half of the study area from north to south and accommodates up to 10,000–15,000 automobiles a day. The road does not have curbs and gutters or sidewalks. In addition, there is a system of service roads that link the various buildings belonging to the mental health hospital.

The Tennessee River provides access by boat, although there are no docking facilities on the site. The western portion of Moccasin Bend has approximately 8,700 feet of water frontage. However, to the east, the slope of the land is greater than 20%, and direct access to the river is difficult.

Public parking is available at the golf course, mental health hospital, and for users of the Blue Blazes Trail.

Recreation

Recreational opportunities within the Moccasin Bend study area include the 18-hole public Moccasin Bend Golf Course, which is leased until 2005, where approximately 50,000 rounds of golf are played annually. The Chattanooga Radio Control Club annually leases land near the center of the study area for activities of its 100-member model airplane club. Adjacent to the southern boundary of the golf course is the Blue Blazes Trail, which is a nature trail used for hiking and watching wildlife.

On occasion, guided tours of Stringers Ridge are conducted for visitors wishing to view Civil War sites.

HAZARDOUS MATERIALS

There is potential for asbestos-containing materials and lead-based paint in buildings at the state hospital site. Possible effects might include inhalation of asbestos fibers and ingestion or contact with lead-based paint. The potential exists for lead-containing materials in the backstop area at the firing range with possible seepage into groundwater. In addition, creosote from power line poles along Stringers Ridge has the potential to seep into groundwater. Other possible sources of contaminants in soil or groundwater include the oil pipeline and a hospital disposal area, which has been primarily cleared but may contain small amounts of motor oil. Surveys to determine the presence of hazardous materials on Moccasin Bend would be conducted before the National Park Service received any land at the site.